WHAT IS CLAIMED IS:

1.   An integrated circuit (IC) for data communication comprising:

circuitry for receiving digital signals from devices within a communication network;

circuitry for receiving analog signals from a selected one of said devices;

circuitry for routing said analog and digital signals to a digital signal processor (DSP), said DSP outputting processed signals in response to DSP programming commands;

circuitry for incorporating particular processed digital signals into data packets corresponding to a communication protocol; and

circuitry for receiving and transmitting said data packets of a communication protocol to and from a network coupling said physical layer devices.

2.   The IC of claim 1 further comprising circuitry for outputting analog signals derived from particular ones of said processed signals from said DSP to a particular one of said physical layer devices.

3.   The IC of claim 1, wherein said DSP receives digital data not derived from a corresponding analog signal.

4.   The IC of claim 1, wherein selected first digital data from said DSP are analyzed by a network processor to determine a characteristic of said first digital data, said characteristic used in said network processor to direct a dispensation of said first digital data.

1   5.   The IC of claim 4, wherein said processing to determine said characteristic of said

2   first digital data comprises a pattern recognition algorithm.

1   6.   A network processor comprising:

2   an embedded processor complex (EPC) with multiple processors;

3   a first communication interface to physical layer devices;

4   a second interface to a switch fabric;

5   a memory storage unit;

6   a digital signal processor (DSP) having an analog I/O and a digital I/O interface;

7   and

8   a bus system for coupling said EPC, said physical layer devices, said switch

9   fabric, said storage unit and said DSP.

1   7.   The network processor of claim 6, wherein said DSP is one of said multiple

2   processors in said EPC.

1   8.   The network processor of claim 6, wherein said DSP is a functional core

2   integrated into each one of multiple processors in said EPC.

1   9.   The network processor of claim 6, wherein said DSP is a functional core external

2   to said EPC, said DSP coupled to said EPC and to one of said physical layer devices.

1   10.   The network processor of claim 6, wherein said DSP has an analog signal

2   interface for receiving and sending analog signals and a digital signal interface for

3   sending and receiving digital signals.

1   11.   The network processor of claim 6, wherein said DSP receives program commands

2   via said switch fabric from a remote device.

1   12.   The network processor of claim 6, wherein said DSP receives program commands

2   via a general purpose processor in said network processor.

1   13.   A method for improving the performance and functionality of a network

2   processor controlling the communication between physical layer devices comprising the

3   steps of:

4   adding a DSP core to said network processor;

5   coupling digital signals to and from said network processor and said DSP;

6   executing instructions by said DSP to determine a characteristic of said digital

7   signals; and

8   directing a dispensation of said digital signals based on said determined

9   characteristic.

1   14.   The method of claim 13 further comprising the steps of:

2   coupling analog signals to said DSP;

3   digitizing said analog signals;

4   processing said digitized analog signals by said DSP;

5   incorporating said processed digital signals into data packets corresponding to a

6   communication protocol; and

7   receiving and transmitting said data packets of said processed digital signals to

8   said physical layer devices on a communication network coupled to said network

9   processor.

1   15.   The method of claim 14 further comprising the step of:

2   outputting analog signals converted from said processed digital signals to a

3   particular physical layer device.

1   16.   The method of claim 13, wherein said DSP is one of multiple processors in an

2   embedded processor complex in said network processor.

1   17.   The method of claim 13, wherein said DSP is a functional core integrated into

2   one of multiple processors in a embedded processor complex in said network processor.

1   18.   The method of claim 13, wherein said DSP is a functional core coupled to an

2   embedded processor complex in said network processor one of said physical layer

3   devices.

1   19.   The method of claim 13, wherein said DSP has an analog signal interface for

2   receiving and sending analog signals and a digital signal interface for sending and

3   receiving digital signals.

1   20.   The method of claim 13, wherein said DSP receives program commands via a

2   switch fabric coupled to said network processor from a remote device.

1   21.   The method of claim 13, wherein said DSP receives program commands via a

2   general purpose processor in said network processor.